

Northumbria Research Link

Citation: Burton, Nicholas and Galvin, Peter (2018) Using Template and Matrix Analysis: A case study of Management and Organisation History research. Qualitative Research in Organizations and Management. ISSN 1746-5648 (In Press)

Published by: Emerald

URL: <https://doi.org/10.1108/QROM-04-2018-1626> <<https://doi.org/10.1108/QROM-04-2018-1626>>

This version was downloaded from Northumbria Research Link:
<http://nrl.northumbria.ac.uk/36498/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

This document may differ from the final, published version of the research and has been made available online in accordance with publisher policies. To read and/or cite from the published version of the research, please visit the publisher's website (a subscription may be required.)

www.northumbria.ac.uk/nrl





**USING TEMPLATE AND MATRIX ANALYSIS:
A CASE STUDY OF MANAGEMENT AND ORGANISATION
HISTORY RESEARCH**

| | |
|------------------|---|
| Journal: | <i>Qualitative Research in Organizations and Management</i> |
| Manuscript ID | QROM-04-2018-1626.R3 |
| Manuscript Type: | Original Article |
| Keywords: | Template analysis, Matrix analysis, Personal pensions, Management history |
| | |

SCHOLARONE™
Manuscripts

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

USING TEMPLATE AND MATRIX ANALYSIS:
A CASE STUDY OF MANAGEMENT AND ORGANISATION HISTORY RESEARCH

Abstract

Despite assertions that ‘history matters’, and calls for an ‘historic turn’ and plurality in research methods in management and organisation research, in-depth elaborations of new research methods suitable for handling historical data remain few and far between. This paper presents a qualitative research method using oral history interview data that may advance new types of methodological inquiry in management and organisation history research – and we highlight the potential for extending this approach to handling other types of qualitative temporal data. The method we present combines matrix and template analysis using oral histories from unstructured interviews with thirty-one senior managers in the UK individual personal pensions product market to illuminate how the construction of ‘matrices’ and ‘templates’ can then be compared and contrasted across different time periods, and at different units of analysis, to analyse complex and interdependent processes of organisational and industrial change.

Keywords: Template analysis, Matrix analysis, Personal Pensions, Management history

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Introduction

In this paper, we address a cluster of methodological issues in the study of management and organisation history by showing how a specific method of inquiry – combining matrix and template analysis - can help to resolve issues associated with analysing complex historical data featuring multiple and interdependent units of analysis across sequential time periods.

We situate our discussion and contribution in an initial review of the management and organization history literature, and highlight that the emergence of new methods of inquiry in management and organisation history research have been slow to emerge (Kipping & Usdiken, 2014), despite calls for an ‘historic turn’ (Booth & Rowlinson, 2006; Clark & Rowlinson, 2004) and for methodological plurality (Decker, Kipping & Wadhvani, 2015). As Decker, et al., (2015) and Mills, et al., (2016) highlight, given the historic turn, heterogeneity in research methods in management and organization history research are increasingly necessary to engage in and shape inter-disciplinary academic debates. Historical research often seeks to illuminate sequences or processes through time and space, and synthesise complex phenomena through rich and detailed narration However, such ambitions have faced epistemological and methodological challenges, concerns around how to deal effectively with ‘time’, and how to account for complex historical phenomena at multiple ‘vertical’ and ‘horizontal’ levels of analysis and the interconnectedness between those levels through time (Booth & Rowlinson, 2006; Decker, Kipping & Wadhvani, 2015; Rowlinson, Hassard & Decker, 2014). As we demonstrate in this paper, phenomena in management and organisation intersect in many ways across multiple units of analysis and across time. For example, changes in industry structure in one time period may be associated with changes in the organisation level and/or the product/service level characteristics in sequential or future time periods. The changes are variously affected by the economic, political or social contexts in which the change phenomena occur. How then can methods of inquiry in the study of management and organisation history do justice to the interdependence and connectedness of various ‘change’ phenomena

in the field? In particular, how should management and organisational researchers handle the vertical and horizontal connections between and across phenomena in time and space?

In addressing these questions, we respond to the challenge of Decker, et al., (2015) that heterogeneous methodologies are required if the historic turn in management and organization research continues to gain traction. Thus, we highlight the utility of a method for handling large volumes of process-based qualitative data across time and space. In fact, as noted by Decker, et al., (2015, 35), qualitative, interpretative and process-based research methods are now important across a number of diverse disciplines in wider management and organization research¹. The method that we outline contributes to the plurality debates in management and organization history in two distinctive and related ways. First, we highlight the distinctive contribution and utility of a combination of template and matrix analysis to the study of management and organisation history research. Our 'analytically-structured history' (Rowlinson, et al., 2014) is from a retrospective study in the UK individual pensions market using oral history (interview) data, however, the method, as we suggest in our concluding remarks, has the potential for broader application using other types of historical or longitudinal data. The method encompasses a two-step approach that relies upon a realist epistemology to create multiple temporal brackets, followed by interpretivist data analysis that recognises that past activities took place within particular social and economic contexts. The template analysis is then able to be applied to these distinct time periods to consider particular phenomena of interest. Thus, industries or firms where there are major technological shifts or legislative/regulatory changes would be highly appropriate targets for such types of analysis. The addition of matrix analysis is particularly powerful for considering research questions that span two or more units of analysis. Hence, this research strategy would be well suited to answering questions that consider changes at multiple levels, such as in our case, changes at the industry-level (such as changes to

¹ The authors cite entrepreneurship, organizational change, studies of institutions, institutionalism and categorization, and the history of management (p35).

1
2
3 industry structure and competitive dynamics), the firm-level (such as the scope of firms and how they are
4
5 structured) and the product-level (such as changes in the technology and development or adherence to
6
7 standards).
8
9

10 The second contribution we highlight is that this method is able to deal effectively with large
11
12 amounts of qualitative data through both time and space, and, thus, may be particularly useful for
13
14 management and organization history research. For example, Booth and Rowlinson (2006) noted how
15
16 Pettigrew’s (1985) study of corporate strategy at ICI posed a number of methodological challenges of how
17
18 to handle both retrospective and real-time interview data, leading the author to “a presentation of
19
20 findings that repeatedly transverses the same period of time and departs from conventional business
21
22 history” (Booth & Rowlinson, 2006, 8-9). Our method – encompassing template analysis to interpret the
23
24 data, and matrix analysis to structure and organise the data through time and space - may be useful to
25
26 see the ‘woods for the trees’ in studies of industrial and organizational change with complex,
27
28 interdependent data.
29
30
31

32
33 Our argument is structured as follows: first, we situate our method of enquiry within the recent
34
35 and broader methodological debates within the management and organisation history literature. Second,
36
37 we introduce matrix and template analysis highlighting how the approach can handle different
38
39 epistemological positions. Third, we provide some brief context on the focal industry of our study. We
40
41 then move on to an account of the unique features and practices of template and matrix analysis that
42
43 enable it to do justice to the complexity of management and organisation history research by reference
44
45 to research conducted in the UK financial services sector (mid-1980s to 2014). We conclude by showing
46
47 that our proposed method of inquiry has wider application to other fields using temporal data.
48
49
50

51
52
53 **Studying management and organisation history**
54
55
56
57

Since the 1990s, there have been various calls to reintegrate history in mainstream management and organisation research (eg, Clark & Rowlinson, 2004; Kieser, 1994, Zald, 1993). Despite the emergence of scholarly journals that focus on management and organisation history in the last decade or so, scholarly research in top-ranked, peer-reviewed journals has often explicitly ignored the importance of history², resulting in calls to 'take history seriously' (Kipping & Usdiken, 2014), for an 'historic turn' (Booth & Rowlinson, 2006; Clark & Rowlinson, 2004; Rowlinson, 2013), and for plurality in management and organization history research methods (Decker, et al., 2015).

The dominant mode of historical enquiry has often used a realist epistemology and a quest to produce accurate and 'truthful' representations based upon proper execution of research methods and hypotheses-testing. As Durepos, Mills and Weatherbee (2012: 269) highlight, "realist historians see the recovery of the past as equivocal to history". A number of scholars in the 1990s (eg, Zald, 1993; Kieser, 1994) eschewed the scientific paradigm associated with hypothesis-testing as a form of historical realism that assumes history exists as a repository of facts that can be 'discovered' and re-told with 'epistemic legitimacy' (Clark & Rowlinson, 2004). Such realist representations of history have, however, been challenged. For example, Rowlinson, Hassard and Decker (2014: 252) argue that "...alternative strategies for research and writing organisational history need to be located in relation to the range of ontological, epistemological and methodological assumptions...". Furthermore, according to Bucheli and Wadhwani (2014), research that is concerned with *a priori* assumptions may be conceptualised as even ahistorical and unsuitable as a means to explain past management and organisational behaviour. In contrast, scholars from the interpretivist tradition have tended to highlight openness and reflexivity in research methods and disclosure of ontological and epistemological assumptions. Moreover, Durepos, et al., (2012), Kipping and Usdiken (2014), and Maclean, Harvey and Clegg (2014) have argued that questions concerning how

² Although, Maclean, Harvey & Clegg (2014) highlight how history is implicit in much strategic and management theorising, such as path dependence, the resource based view of the firm, and dynamic capabilities, and strategy and strategic change, to highlight a few.

1
2
3 to represent the past continue to be frustrated by the realist versus interpretivist dualism, and each have
4
5 advocated 'research type' typologies that represent the range of different ontological, epistemological
6
7 and methodological approaches to historical research in management and organisation studies.
8
9

10 At the heart of this epistemological challenge is the conceptualisation of memory and, in the
11
12 case of this paper, how memories may be utilised in template and matrix analysis. The 'mechanical model'
13
14 in which memories are stored and then retrieved in the same way as something like a computer file (Rose,
15
16 2008) takes a realist perspective suggesting that facts can be recalled and presented. There may be some
17
18 validity to such a model in respect of particular types of memories. 'When' (dates), 'who' (specific
19
20 individuals or firms) and 'where' (physical location) types of questions may be able to be recalled from
21
22 the appropriate 'storage bin' (Walsh & Ungson, 1991), but deeper questions around 'why' and 'how' tend
23
24 to require recollection in respect of the context of the particular time and are potentially impacted by the
25
26 respondent's participation in the event (Schacter, 1997). In this respect it is important to recognise both
27
28 the collected and collective forms of memory. Collected memories are individually held (Nissley & Casey,
29
30 2002; Rowlinson, et al., 2010) whereas collective memories are embodied in a shared understanding
31
32 (Suddaby, Foster & Quinn-Trank, 2016). However, "given the recursive relationship between individual
33
34 memories and the shared contexts individuals draw upon to form them" (Do, Lyle & Walsh, 2018: 3) these
35
36 two forms of memories are likely to interact with each other.
37
38
39
40
41

42 Historical narratives have often adopted a realist ontology where the historians can "produce
43
44 accurate and truthful representations of the past, *as it happened*" (Durepos et al., 2012: 269, italics in
45
46 original). However, as memory involves the retrieval of information that is recollected both in the context
47
48 of a particular time and place (and relative to subsequent events) as well as the involvement of the
49
50 participant in the particular event (Schacter, 1997), it is clear that any retelling of history will contain at
51
52 least elements that are subjective rather than reflecting a singular truth. Thus the epistemological
53
54 assumptions concerning our treatment of history varies within management research.
55
56
57
58
59
60

Perhaps the other central concern in utilising history in management research is the treatment of time. Central to any approach to historical research – and for that matter, any other forms of temporal research – is how we explicitly address time or chronology, and an implicit understanding that the relevant context is constantly changing and evolving. Rowlinson, Hassard and Decker (2014) highlight the role that chronology plays in history – for historians generally, and especially for management and organisation scholars, it is not just that events follow each other, but that all actions have a distinct social and economic context without which they cannot be easily understood. While historians tend to create their own periodisation, organisation theorists are interested in chronology where time is taken as constant and the sequence of events is important (Rowlinson et al., 2014). Chronology encourages the chunking of temporal data into manageable periods, known as ‘temporal bracketing’ (Langley, 1999), ‘periodization’ (Fear, 2014), or ‘temporal zones’ (Ancona, et al., 2001) that aim to identify meaningful time units within a stream of historical data. As Langley, et al., (2013: 7) highlight:

“...temporal brackets (which generally unfold sequentially over time) are constructed as progressions of events and activities separated by identifiable discontinuities in the temporal flow. They enable researchers to examine the recurrence and accumulation of progressions. This permits replicating theoretical ideas in successive time periods and also to analyzing how the changing context from previous periods impacts subsequent events in current periods”.

These periods may simply relate to a convenient chunk of time, but for analytical purposes they are often likely to be characterised by an important change event. In management and organisation history research, change events may relate to the macro-environmental context (such as economic, political or social changes) or the micro-environmental context (such as changes associated with industrial, regulatory, or competitive change). Alternatively, periods of change may be associated with organisation-specific change events such as, for example, a company re-organisation, merger and

acquisition, or the period of tenure of a particular CEO. Further, histories are often presented as periods running between two particular change points which act as ‘bookends’, or research may focus on a particular change point as the phenomena of focus.

Deciding on an approach to periodization is, however, not without its difficulties. Aldrich (1999: 206) recognised the problems of identifying temporal periods given that “different observers view the same events from diverse perspectives on their significance” and Rowlinson, et al., (2014: 259) highlight that, “...historians face the continual problem of devising criteria for partitioning the past into manageable chunks”. How the researcher formulates the relevant bookends of the chronological period may also be a decision with epistemological or methodological concerns. For example, is the period ‘imposed’ upon the research design *a priori*, or does it ‘emerge’ from the data in some meaningful way? These are non-trivial questions that pose methodological challenges, which we will elaborate on further in this paper.

Despite the growing recognition of the importance of incorporating history into contemporary management and organisation research, methodological advances often remain slow (eg, Ancona, et al., 2001; Kipping & Usdiken, 2014), due to epistemological and methodological challenges (Jacques, 2006; Lorenz, 2011). For instance, Lorenz (2011) has highlighted that historical research suffers from epistemological problems associated with how narrative and time are treated, and what counts as ‘evidence’, necessitating a more rigorous approach to methodology. Kipping & Usdiken, 2014: 537-552) similarly highlight that “...in-depth elaborations of historical approaches and methodology remain marginal within the core of organisation and management theory” and “process studies examining mainly changes in organisation and strategy ... has – somewhat surprisingly – only been realised to a very limited extent”. What is needed, according to Clark & Rowlinson (2004: 346) is “... an approach to the past as process and context, and not merely as a variable”.

In the following section, we next introduce template and matrix analysis as a methodological advance that can help address some of the challenges associated with epistemology and methodology, that proposes an approach to handle 'time', and accounts for historical phenomena at multiple vertical and horizontal levels of analysis and their interdependence and interconnectedness.

Template and matrix analysis

Data analysis methods using textual data are often categorised into those methods that are epistemologically-committed such as Interpretive Phenomenological Analysis (IPA) or those that are 'generic' methods such as thematic analysis (Braun & Clarke, 2006; 2013), template analysis (King, 2004; King & Brookes, 2017), matrix analysis (Nadin & Cassell, 2004) and framework analysis (Ritchie & Spencer, 1994). Template analysis is a distinctive and epistemologically-flexible type of thematic analysis, first described by Crabtree and Miller (1992), and later developed by King (1998; 2004), gaining traction in psychology, sociology, healthcare and management and organisation studies (Anonymous, 2018; Waring & Wainwright, 2008)³.

During template analysis, King (2004) highlights that the researcher produces a list of codes (the 'template') that represents themes in the data relevant to the research question. Template analysis emphasises hierarchal coding but balances structure in the process of analysing textual data with the flexibility to adapt it to the needs of a particular research study (Brookes, et al., 2015). The method centres around the construction of a 'template' or set of templates, usually on the basis of an initial subset or sample of the data, which is then applied and reapplied to the remaining data, through a process of

³ Anonymous (2018) uses matrix and template analysis to analyse oral history data in the UK individual personal pensions sector in the late-1980s to provide new insights on the financialization agenda on the Conservative government led by Margaret Thatcher. Waring and Wainwright (2008) use template analysis to analyse innovation and project management in the NHS in the North-East of the UK

continual revision. As King and Horrocks (2010: 166) point out, the “reiteration of applying, revising and then reapplying the template continues until the analyst feels it is clear and thorough enough to serve as a basis for building an account of the findings”. Although there is an emphasis on hierarchical coding of themes, template analysis does not impose a particular set sequence of coding levels. This means that researchers using template analysis often develop particular themes more extensively, enabling them to capture the richest and most detailed aspects of their data.

Some themes may be defined by the ‘realist’ researcher *a priori* – perhaps defined from a literature review – or they can emerge interpretively from the textual data. Given some themes may either be defined *a priori* or emerge inductively, template analysis is a method that can be used within different philosophical traditions⁴ (King & Brookes, 2017; 2018). On one hand, it can be utilised in types of realist research that accepts much of the assumptions of quantitative social science research, often found in many management and organisation history studies. Used in this way, researchers utilising template analysis would be concerned with ‘quality’ issues of inter-coder comparison, respondent feedback (in the case of interview data), and audit trails (King & Brooks, 2017). On the other hand, themes may emerge from the textual data in the type of interpretivist or radical constructionist research discussed by Madill, Jordan and Shirley (2000). In these types of interpretivist traditions, staying within the parameters of this paper, the researcher assumes that there are multiple interpretations to be made of any historical and temporal data, dependent upon the epistemological position of the researcher. As King and Brooks (2017) highlight, this kind of research is less concerned with issues of ‘quality’ and instead foregrounds issues such as researcher reflexivity, examining the topic from differing perspectives, and the richness of the description produced, as important requirements. Template analysis may also be employed in other kinds of research that sit between these two positions, such as subtle realism (Hammersley, 1992). limited

⁴ King and Brookes (2017) highlight a number of template analysis studies within different epistemological and methodological traditions

1
2
3 realism (King & Brooks, 2017, 2018) and critical realism (Archer, et al., 1998). There are, of course, kinds
4
5 of research where template analysis may not be suitable. For example, King and Brooks (2018) highlight
6
7 that kinds of phenomenological approaches that seek to identity 'essences' of phenomena through
8
9 processes of condensing or distilling may not be suitable. Matrix Analysis (eg, Nadin & Cassell, 2004) is
10
11 another epistemologically-flexible data analysis method, developed from the work of Miles and
12
13 Huberman (1994) and based upon the idea of utilising different types of table (or 'matrix') to display and
14
15 develop analysis across cases (King & Brooks, 2018). King and Brooks (2018: 229) highlight that:
16
17

18
19 "There are many different ways to in which matrices may be organised; for example, by time
20
21 period, to trace chronological developments (e.g. Cassell, 1989), by organisational case
22
23 examples (e.g. Mahmood-Yousuf et al., 2008) or by data collection method where multiple
24
25 forms were used in one study (e.g. Kislov et al., 2012)".
26
27

28
29 The development of a matrix – or a number of matrices – tends to provide a structure in which
30
31 to organize and/or present the outcomes of coding at quite a broad-brush level. The approach is therefore
32
33 useful for large studies with large volumes of textual data, often the case in management and organisation
34
35 historical research, or where multiple cases need to be compared and contrasted. The use of a matrix also
36
37 allows data to be tabulated to different units of analysis relevant to the study so as to illuminate
38
39 interdependence and connections, as well as comparisons both within and across different 'levels' of data.
40
41 In such broad matrix-style approaches, there is naturally a risk that the fine-grained analysis needed for
42
43 some studies may be lost. In contrast, when used alone, fine-grained coding approaches, such as template
44
45 analysis, may also overwhelm the researcher when faced with large amounts of textual data across
46
47 different units of analysis, cases, and chronological periods. Therefore, we propose that matrices are used
48
49 alongside other more fine-grained forms of data analysis, such as template analysis (Nadin & Cassell,
50
51
52
53
54
55
56
57
58
59
60

2004). However, with the notable exception of Cassell (1989) and Anonymous⁵ (2016; 2018), examples of the combined use of template and matrix analysis using historical or temporal data are rare.

The combination of matrix and template analysis we advocate was developed for a research project that examined change processes in the UK individual personal pensions product market between the mid-1980s and 2014 (Anonymous, 2016). The method of inquiry developed utilised an inductive approach to periodization, and oral histories were analysed to construct a master matrix and multiple 'templates' that represented (i) the time periods, and (ii) the different units of analysis, deemed meaningful by participants. This approach allowed us to reveal a deeper understanding of the interdependence and connectedness of multiple change phenomena across time.

Context

The UK individual personal pensions product market was chosen on conceptual grounds, because it had seemingly undergone multiple periods of change (Anonymous, 2018). The mid-1980s was selected as the starting point of the study as it is widely recognized as the starting point of the financialization agenda in the UK and US, and the deregulation reforms led by the then Conservative PM Margaret Thatcher (Anonymous, 2018). More specifically, the reforms to the UK pensions product market were embodied in the UK in the Social Security Act 1986 (which came into force in January 1988). Given the paucity of studies concerned with the development of UK individual personal pensions in the aftermath of the election of the Conservative government in 1979 (see Anonymous, 2018), the inspiration for this paper was a research project undertaken in late 2014 which examined the relationship between regulation, financialization and organisational strategy (Anonymous, 2016).

⁵ Self-citation of papers that may limit the potential for a true double blind review have been listed as Anonymous (with the relevant years provided). Should the paper be accepted, these will be listed with full details in the final version that is provided as a basis for the typesetting and subsequent publication.

Management and organisation history using template and matrix analysis

Like mixed method studies (e.g. Creswell & Plano Clark, 2011) there was no single obvious epistemological position that guided the entirety of this study. The initial temporal bracketing that defined the time periods for analysis and the assessment of architectural forms that were developed a priori adopted a perspective of realism. The analysis of the data with no a priori themes (beyond the generalist research questions) across the different time periods was interpretivist and recognised that respondent's reflections on past events were socially constructed. Given the realism associated with the bracketing and creation of the various matrices, but taking an interpretivist approach to coding the data, it may be appropriate to describe the epistemological position as 'limited realism' (King & Brooks, 2017) – which has similarities to the kind of 'subtle realism' advocated by ethnographer Hammersely (1992) – a commitment to a realist ontology combined with an interpretivist epistemology⁶ (we shall return to this distinction in this and future sections). Certainly moving between the template and the data, and the data and the template creates something of an iterative deductive-inductive logic that supported our intention of recognising different respondent experiences whilst telling a 'credible' tale of the events that took place across the industry.

Our data was collected from unstructured interviews (oral histories⁷) with thirty-one senior managers (representing six different companies), each with first-hand and continuous experience of the time period between mid-1980s and 2014. Each interviewee held a strategic role at an insurance company or fund management company. Thus, our selection criteria for inclusion in the study aimed to give credibility to the findings. While there should be some healthy scepticism towards an interview sample of thirty-one, a Linked-In search of potential respondents highlighted only seventy-seven strategists with

⁶ As discussed in this paper, we argue, however, that the method of inquiry we propose can be adapted to accommodate different epistemological positions

⁷ For example, see Carnegie & Napier (1996) and Thompson (1988)

continuous professional experience spanning the time-period bookends still practicing in the sector. Our use of oral history was sympathetic to the position advocated by Carnegie and Napier (1996: 29) who argue that “oral history’s greatest potential lies in its ability to capture the testimony of those effectively excluded from organisational archives”. Given existing archival studies (eg, Hannah, 1986) and organisational histories (eg, Moss, 2000), our intention was to endeavour to illuminate new findings and insights from strategists who were leading or closely-involved in organisational strategy during the time periods of interest to us. We recognize the limitations of this primary data collection method – such as memory and recall bias (eg, Glick, et al., 1990) – which we elaborate on later in this paper and, in our concluding remarks, we advance ways that our proposed method could also accommodate archival and secondary data sources to verify and triangulate other forms of data (which would be of interest to realist historians).

The professional experience of the interviewees is summarised in Table 1:

<<<Insert table 1 about here>>>

While oral histories deal with a person’s past, and are often used to give voice to those stories that would not usually be heard (eg, Haynes, 2010; Thompson, 1988), we were interested in capturing the oral histories of interviewees in respect of the industrial and organisational change events that occurred within the UK individual personal pensions product market within the period between the mid-1980s to 2014. However, while the time period ‘bookends’ (which were initially inductively generated from respondents) were imposed upon data collection, the interviews were ‘unstructured’ to encourage interviewees to range across a number of different topics and phenomena that were meaningful to their histories of events.

The structure of the interview (each around one hour) was sub-divided into two distinct parts. In part one, we invited interviewees to ‘chunk’ the time bookends (mid-1980s to 2014) into meaningful

and sequential time sub-periods. Following this, we then encouraged interviewees to describe the product design within each time sub-period. To assist interviewees in assigning product design types to each time sub-period, we provided interviewees with a stylised product design typology (see, Anonymous, 2018).

The following five time sub-periods were identified:

- Mid to late-1980s
- Early to mid-1990s
- Mid-1990s to mid-noughties
- Mid-noughties to 2012
- 2012 to 2014

There was a significant degree of commonality in the time-chunking performed by the interviewees. For example, of the thirty-one interviewees, twenty-six identified a change period of 1984 to 1990. However, the remaining five suggested 1984-1989, 1986-1989, and three respondents identified 1985-1990. This kind of commonality was experienced across the chunking of all time sub-periods above; a high-level of commonality, but with some difference. Following the first stage of interviews, we created a 'master periodization', with the help of an expert panel⁸ to further enhance the credibility of the findings, to synthesise the thirty-one time sub-periods into a single 'master periodization' that reflected the generalities across the interviewees. Given the commonality in time-chunking across the thirty-one interviewees, this approach seemed 'reasonable' given our aim for credibility. Next, interviewees were encouraged to assign a product design type to the time sub-periods they had identified. For this step, there was complete commonality across all thirty-one interviewees. The product design types identified were as follows:

⁸ The expert panel consisted of 2 'experts' known within the industry as 'thought-leaders' who were not involved in the interviews. The expert panel also reviewed our coding to ensure that the codes would be meaningful to respondents and aligned with the data.

- Mid to late-1980s: non-modular/integrated product
- Early to mid-1990s: Closed and modular product
- Mid-1990s to mid-noughties: Hybrid product
- Mid-noughties to 2012: Modular product
- 2012-2014: Hybrid product

From this part of the interviews, we were then able to construct the following matrix that then guided data analysis, as shown in Figure 1.

<<<Insert Figure 1 about here>>>

Following the first interviews and meeting with our ‘expert panel’, a copy of the audio-recorded transcript and the ‘master periodization’ was emailed to each interviewee inviting any changes before data analysis. Twenty-five respondents confirmed that the transcript was accurate and that the matrix was a ‘credible’ representation of the change periods and product types. Six respondents did not respond to our email.

In the second interview, the matrix enabled unstructured questions to be directed towards each time sub-period, such as ‘what was going on in this time period?’, ‘what led to this change?’, ‘what was the result of this change?’. Furthermore, questions could be directed to the transition points from one-time sub-period to another. In addition, during data analysis, the matrix allowed us to code themes to discreet time sub-periods.

We used a sample of the data – three interviews – to construct an initial template. However, within the sample data codes were clearly emerging at three different units of analysis – (1) industry level themes, (2) organisation-specific themes, and (3) themes about the product design. We decided at this stage to amend our initial matrix to incorporate the three units of analysis that were emerging from respondent accounts, as follows:

<<<Insert Figure 2 here>>>

With a more work-able matrix - and a set of fifteen initial templates - we now applied these to the remainder of the data, while remaining open to amending our matrix and templates throughout data analysis, as appropriate. Despite having some *a priori* ideas from our literature review, we decided not to impose *a priori* themes upon the data. Preferring instead to allow themes to emerge from the data, in line with our interpretivist epistemology. We had to weigh-up the potential complexity of constructing and analysing fifteen templates against our need for fine-grained analysis of the textual data. As 'live' documents, the templates were continually modified during the data analysis phase. For example, we deleted various codes, merged lower level codes together, and changed the position of some codes in the template hierarchy as the data analysis process continued. Where new themes emerged or other changes to the templates were made, previously analysed interview transcripts were re-examined, and this iterative process continued *ad-finetum*.

The coding process proceeded as follows: first, each interview transcript was coded one at a time, focusing on one time sub-period, before moving onto the next, from past to present. Second, horizontal cross-sectional analysis was then conducted in order to examine all templates across time, from past to present. Third, vertical cross-sectional analysis was then conducted in order to examine all templates across different units of analysis. This approach often involved reading and re-reading the oral histories many times as changes at one unit of analysis may only be found to impact other units of analysis in subsequent time sub-periods. As mentioned earlier, the final fifteen templates were then examined by an 'expert panel' to ensure that they reflected a 'credible' representation of the change processes described by the different respondents. It was not possible at the time for another party to code the data independently to maximise inter-coder reliability and thus the two experts from industry were used to ensure that the coding developed made sense in respect of the data and their knowledge of the industry.

The final step in our data analysis phase was to examine the fifteen templates as a whole in order to identify 'integrative themes' that permeate the entire data (King, 2004; King & Brooks, 2017).

In the next section, we highlight our template analysis between two sequential time sub-periods (mid noughties to 2012 and 2012-2014) and show how we identify 'integrative themes' in the data.

Case example - Factors affecting industry structure between mid-noughties and 2014

Period: mid-noughties-2012

The mid-noughties was marked by themes relating to a technological disruption and changes in regulation, which were, in turn, associated with significant industry specialisation. To illustrate this, one respondent observed that “technological disruption and new product technologies threw everything up in the air, and the industry value chain was being actively reconfigured. Specialisation is definitely going on and there’s re-carving up of the old value chain”. Industry specialisation emerged as a theme from respondents who highlighted that “we outsourced because the technology providers spend billions of pounds in core operating infrastructure and have scale efficiencies and quality”. Another respondent suggested that “it costs us a lot of money to keep up with legislation, regulation, and product enhancements and it’s just not efficient to make all of those changes in-house”. A further respondent commented that “it is operationally more cost effective for us to outsource. CEOs were saying ‘great, I’ve now got variable costs and less of a fixed cost company’”.

Changes in regulation occurring in 2006 also promoted these processes. The then Labour government (1997-2010) had previously announced a pensions simplification regime to be implemented in 2006. The intention of the new regulations were to simplify the complex range of pension regulations amassed over many decades into a single set of product regulations. For instance, one respondent suggested that “2006 was a big catalyst. Competition got much stronger, we went from about 6 to 30 competitors, because the market was growing, there is enough capacity at the moment for them all.

Another respondent highlighted, “We saw a proliferation of new entrants in all segments of the value chain who are very small but which have dragged the existing incumbents to change their businesses and to adopt leaner outsourcing models in order to survive”. However, the regulations increased competition and put downward pressure on profit margins, and scale economies were seen as the key strategic goal to survive, “our mind-set was scale, because the technology companies charge you on the basis of benefitting from that scale”. One respondent summed up “the pensions space was very profitable thank you very much indeed. In came the technology companies, new regulations, not profitable anymore. You basically tried to hang on”.

Period: 2012-2014

Between 2012 and 2014, the specialised industry value chain reconfigured towards vertical integration. The implementation of further regulation initiated by the Labour Government (1997-2010), and enacted by the Conservative government (2010--) in 2012 was identified as a key change event. The regulations put organisations under increasing commercial pressure to differentiate and seek competitive advantage – as profits margins were diminishing. In response to threats of commoditisation, most organisations began to consider mechanisms to improve profit margins. As one respondent recalled, “how do you add more value back? Margins get squeezed so, so tight, that somebody in the value-chain's got to do something different because there's a footrace to the floor, which is clearly doing damage” and another highlighted that “you can certainly see some of those companies taking activities back in house that they would think offer differentiation. Otherwise, it's pure commoditisation, and then difficult to have something that looks distinctive”.

Forward and backward vertical integration began to be a characteristic of the industry value chain after 2012. For example, organisations began forward integrating into distribution, “a quasi-arms-length solution where the providers were taking more and more significant financial stakes in distribution,

and were using those stakes to lock-out competitors”. Organisations were also backward integrating to buy-in specialist capabilities, such as “we bought a stockbroking business. I think in terms of development of products now, it's all about actually being very close to all the moving pieces”.

From our example, there was already an emerging realisation – as early as the mid-noughties – that the changes to the technological regime – a shift to ‘platform’ technologies (coded as a product level theme) and changes in the regulatory environment (coded as an industry level theme), posed significant risks to continued differentiation and competitive advantage, and ultimately to profit margins (coded as an organisational theme). One respondent recalled “The shake-out will be massive”. In this period (mid-noughties to 2012), the technology and regulation environments were strongly associated with increasing specialisation and outsourcing throughout the industry (coded as an industry level theme). However, the effects of these processes did not play out until the next subsequent period in 2012-2014. In this period, we highlight the relationship between further regulation and industry structure change as it reintegrated to a more vertically integrated structure. We also show how organisation-level themes associated with value and profitability was a key driver for this change.

In our case example, we show the association between technology, regulation and industry structure. These three integrative themes permeated much of our data across the five time sub-periods. For example, in a recent paper that examines the UK individual personal pensions market (Anonymous, 2018), the main author identifies regulation and (de)regulation as an integrative theme throughout the period mid-1980s to mid-1990s. In fact, the data set shows how continuous changes in regulation – such as Stakeholder pensions in 2001, pensions simplification in 2006, and recent changes to distribution in 2012 (Retail Distribution Review) – can all be interpreted as critical change events that had unforeseen impacts on organisation- and product design-level strategy. While it is perhaps hardly surprising that ‘regulation’ emerged as an integrative theme given the UK individual personal pensions product market

is a highly-regulated financial services sector, what was surprising and unexpected was the extent to which it impacted upon other units of analysis, such as significant changes to industry structure.

Discussion and conclusion

Both the template analysis and matrix analysis relied upon respondents providing a series of responses to questions to create an oral history concerning the UK pension industry since the mid-1980s. However, the different stages in the data collection relied upon different epistemological assumptions. Creating the timeframes (brackets) and the subsequent matrices through which the comparative analysis could occur adopted a position of realism. Whilst the exact point that distinguishes one timeframe from another varied somewhat across respondents, the legislative or technological changes that tended to define the transition points between the timeframes were recognisable events and thus the researchers approached the determination of the brackets and the product, firm and industry architectures from a position of realism. For example, the first timeframe was identified as being 1984 to 1990, but some respondents suggested different starting dates and ending dates to this time period.

However, the second stage – the inductive component of the research – that would form the basis of the template analysis provided an opportunity to gain an insight into how key industry participants remembered various events. As the interview had limited structure, respondents were able to highlight those elements that were most likely more distinctive to them (Hunt, 2003). These memories invariably reflect their own reality given respondents' different roles and thus exposure to the changes occurring at different levels (ie product, firm and industry). The memories of respondents also reflect the relevant organisational memory of their place of work. That is, the individual memory presented incorporates the shared understanding of the events that constitutes the organisational memory (Do et al., 2018). Thus, the memories reflect the subjective experience of the respondent. For example, some respondents initially focussed on changes to the product, others to the changes in the scope of the major firms in the

industry and others still pointed to the changes in competitive dynamics. Interestingly, while there were always differences in what was the primary focus amongst the different respondents, within a particular time period, there were clear trends concerning the focus across the different time periods. For example, the mid-noughties to 2012 saw a specific focus on the technological disruption and the resulting changes in the industry value chain.

As the initial bracketing and creation of the templates relied upon realism, yet the analysis of data was undertaken in an interpretivist manner (as the themes emerged from the data rather than the analysis occur via established coding categories) it is not clear that there is a single dominant epistemology. Unlike mixed method studies whereby there are distinct stages (with different respondents) that may feature first, an inductive phase to identify key concepts to investigate and then second, a test of these concepts via a positivist epistemology, in our case, the two stages were more highly integrated than might be the case in many mixed methods studies. We thus suggest that while our approach has elements of 'limited realism' (a realist ontology combined with an interpretivist epistemology), the template analysis that recognises the multiple realities of respondents takes a more interpretivist epistemology. Whilst King and Brooks (2017) highlight that template analysis may be agnostic in respect of the epistemological position adopted, in our case the two phases take on different epistemological assumptions.

Through considering a number of distinct time periods and as the narratives collected covered multiple levels (industry, firm and product), a key feature of studies using template and matrix analysis is the extensive and complex data that they can handle. Template analysis can be used in the context of any form of textual data, such as interviews, focus groups, diary entries, and social media (Brooks & King, 2012), and in this paper we have argued the method has potential uses for management historians analysing qualitative oral history data. It may certainly be appealing to researchers who wish to find an

alternative method to the prescriptions often associated with other thematic and coding approaches (eg, Braun & Clarke, 2006; 2013).

Furthermore, in our study we found that combining template and matrix analysis is a useful approach that can be modified to the needs of the researcher within the parameters of different epistemological traditions. Indeed, given this utility, the method we have outlined may appeal to management and organisation historians of different epistemological stripes. For example, 'realist' researchers may be attracted to the feature of *a priori* codes, or to the various dimensions of 'research quality' that can be included within a template and matrix analysis study. We have highlighted how we utilised respondent feedback and the use of an expert panel, to name but two approaches, to assist in providing a 'credible' representation of how and why products, firms and the industry developed and changed over time. Of course, further quality dimensions in the qualitative research literature could equally be employed, such as inter-coder comparison, and other types of audit trails (King & Brooks, 2018).

On the other hand, researchers in the interpretivist tradition may be attracted to the way themes may emerge from the textual data being used. Research in this tradition assumes that there are multiple interpretations to be made of any historical and temporal data, and as a consequence, our approach, for example, to 'master periodization' may not sit well. Nonetheless, this kind of research is much less concerned with issues of 'credibility' and instead would have much more emphasis on reflexivity, examining differing and competing perspectives, and the richness of the description produced. Template and matrix analysis, in this tradition, would seemingly provide the utility such research often demands.

Our case example has highlighted how a combination of template and matrix analysis can serve to structure complex data – allowing us to see the wood for the trees – and yet, at the same time, our interpretivist approach to template analysis allowed us to focus on the particulars of our data. Together,

the approach has allowed us to trace changes events chronologically, but also, following Pettigrew (1990), how changes in one event at one level of analysis may have high levels of interdependence with changes in other levels of analysis in future time periods.

We contribute to the management literature in the following ways. First, our method responds directly to recent calls for new methods of inquiry in management and organisation history research. Thematic approaches to textual data analysis have often largely ignored the issue of temporality and perhaps, in turn, management and organisation historians have often ignored thematic analysis approaches (such as template analysis) and thus such an approach clearly aligns with Rowlinson et al. (2014) focus on the role of chronology in management and organisation studies. Certainly in a review of studies using template analysis in business and management (King & Brooks, 2017), few studies have used template analysis with time in any meaningful way.

Second, as we discuss in limitations, our study relies exclusively upon primary qualitative data elicited through a set of broad questions that tap the memories of long-term industry participants that go back thirty years. These memories emphasise the importance of the subjective experience of the respondent and their particular experience including the manner in which their individual memories are shaped by the organisational memory. Thus we take a realist approach to ‘when’, ‘where’ and ‘what’ type questions akin to the storage bins of memory concept proposed by Walsh and Ungson (1991) but recognise the multiple realities concerning ‘why’ and ‘how’ type questions. Such an approach would fall into the ‘narrating’ quadrant of Maclean, Harvey and Clegg (2014) as a research strategy for using history in organisation studies. Nevertheless, we contend that this proposed method may be utilised by management and organisation historians engaged in analysing other forms of textual data, such as secondary and archival research – either in addition to qualitative data as a form of triangulation, or instead of. As management and organisation historians often analyse and interpret large volumes of textual data, the combination of matrix and template analysis attempts to develop a more structured

approach that can handle large volumes of data, but also complex and uneven forms of temporality or units of analysis. In our case, the capacity of the research method to consider phenomena across different levels of analysis and the interactions between these levels was critical.

Third, our proposed method may also interest management and organisation scholars handling other forms of temporal data, such as longitudinal data where chronology is an important part of the data. Based on the above, we propose, first, that a combination of template and matrix analysis – through its unique features and epistemological flexibility – is eminently appropriate for wider use in management and organisation history.

Limitations

With theoretical implications aside, this paper has some obvious limitations. First, in the operationalization of our proposed method we rely upon oral histories from thirty-one senior managers as our data source. We have not attempted to verify or triangulate their accounts with archival or secondary data. Our primary aim in this study was to illuminate new discoveries about change events in the UK individual personal pensions product market from actors who were involved in interpreting the changes in real-time, and, therefore, our interviews provided access to primary data unavailable by any other methods.

The second obvious limitation in the operationalization of our method is that errors of recall can permeate oral histories. However, the fact that the retrieval of memories to build a history of the industry is imperfect provide clues as to those events or activities that were seen as critical and/or unique by respondents – something that helped the researchers understand what was deemed as critical from the point of view of different respondents. However, memories change over time and thus the analysis reflects the reality of the participants at the time. For example, an individual memory might change if a respondent moved to another firm as the organisational memory there may be quite different and thus

they may look back at their own experiences in a different way given this new understanding of the events from a different standpoint.

Nonetheless, despite these limitations to the operationalization of our proposed method, as we highlighted above, we contend that our proposed method may serve management and organisation historians engaged in analysing other forms of textual data, such as secondary and archival research.

References

- Anonymous (2016). Full citation including author details to be provided upon acceptance. The reference is currently anonymised to ensure the double-blind review process is not comprised.
- Anonymous (2018). As per above statement.
- Anonymous (2018). As per above statement.
- Aldrich, H. (1999). *Organisations evolving*. Sage, London.
- Ancona, D., Goodman, P., Lawrence, B., & Tushman, M. (2001). 'Time: a new research lens', *Academy of Management Review*, 26(4), pp645-663.
- Archer, M., Bhasker, R., Collier, A., Lawson, T., & Norrie, A. (eds) (1998). Critical realism: essential readings. Routledge, London.
- Booth, C., & Rowlinson, M. (2006). Management and organizational history: Prospects. *Management & Organizational History*, 1(1), pp5-30
- Braun, V., & Clarke, V. (2006). 'Using thematic analysis in psychology'. *Qualitative Research in Psychology*, 3(2), pp77-101.
- Braun, V. & Clarke, J. (2013). *Successful Qualitative Research: A Practical Guide for Beginners*. Sage, London.
- Brooks, J., & King, N. (2012). 'Qualitative psychology in the real word: the utility of template analysis'. In: 2012 British Psychological Society Annual Conference, 18-20 April 2012, London.
- Brooks, J., McCluskey, S., Turley, E. & King, N. (2015) 'The utility of template analysis in qualitative psychology research'. *Qualitative Research in Psychology*, 12(2), pp202–22.
- Bucheli, M., & Wadhwani, R. (2014). Organizations in time. *History, Theory, Methods*. Oxford University Press, Oxford, UK.
- Carnegie G., & Napier C. (1996). 'Critical and interpretative histories: insights into accounting's present and future through its past'. *Accounting, Auditing and Accountability Journal*, 9(3), pp7–39.
- Cassell, C. (1989). 'The use of information technology in the community: An evaluation'. PhD Thesis, University of Sheffield.

- Clark, P., & Rowlinson, M. (2004). 'The treatment of history in organisation studies: towards a historic turn?', *Business history*, 46(3), pp331-352
- Crabtree, B., & Miller W. (1999). A template approach to text analysis: developing and using codebooks". In B. Crabtree. & W. Miller (Eds), *Doing qualitative research*. (pp163-178). Sage, London.
- Creswell, J.W. & Plano Clark, V.L. (2011): *Designing and Conducting Mixed Methods Research* (2nd ed). Sage, London
- Decker, S., Kipping, M., & Wadhwani. (2015). New business histories! Plurality in business history research methods, *Business History*, 57(1), pp30-40
- Do, Boram Do, Lyle, M.C.B. & Walsh, I.J. (2018 – in press). Driving down memory lane: The influence of memories in a community following organizational demise, *Organization Studies*, available at: <https://doi.org/10.1177/0170840618765573>
- Durepos, G., Mills, A, & Weatherbee, T. (2012). 'Theorizing the past: realism, relativism, relationalism and the reassembly of Weber'. *Management and organisational history*, 7:3, pp267-281
- Fear, J. (2014). Mining the past: historicizing organizational learning and change. In Bucheli, M and Wadhwani, R (Eds). *Organizations in time: history, theory, methods*, pp169-191. Oxford University Press, Oxford.
- Glick, W., Huber, G., Chet Miller, D., Doty, H., & Sutcliffe, K. (1990). 'Studying changes in organisational design and effectiveness: retrospective event histories and periodic assessments'. *Organisation Science*, 1(3), pp293-312
- Hammersely, M. (1992). Ethnography and realism. In M. Hammersely (ed). *What's wrong with ethnography?* Routledge, London.
- Hannah, L. (1986). *Inventing retirement: the development of occupational pensions in Britain*. University Press, Cambridge, England.
- Haynes, K. (2010). 'Other lives in accounting: critical reflections on oral history methodology in action'. *Critical Perspectives on Accounting*, 21(3), pp221-231
- Hunt, R. (2003). Two contributions of distinctive processing to accurate memory, *Journal of Memory and Language*, 48, pp811-825.

- Jacques, R. (2006). 'History, historiography, and organization studies: the challenge and the potential'. *Management and Organizational History*, 1(1), pp31-49
- Kieser, A. (1994). 'Why organisation theory needs historical analysis – and how this should be performed'. *Organization Science*, 5(4), pp608-620
- Kislov, R., Walshe, K. & Harvey, G. (2012). 'Managing boundaries in primary care service improvement: A developmental approach to communities of practice'. *Implementation Science*, 7(97). Available at: <http://implementationscience.biomedcentral.com/articles/10.1186/1748-5908-7-97>.
- King, N. (1998). Template analysis. In G. Symon. & C. Cassell, (Eds), *Qualitative methods and analysis in organisational research*. Sage, London.
- King, N. (2004). Using templates in the thematic analysis of texts. In G. Symon, & C. Cassell. (Eds), *Qualitative methods and analysis in organisational research*. Sage, London.
- King, N. & Brooks, J. (2017). *Template Analysis for Business and Management Students (Mastering Business Research Methods)*. Sage, London.
- King, N. & Brooks, J. (2018). Thematic Analysis in Organizational Research. In C. Cassell, A.L. Cunliffe and G. Grandy (eds.), *The SAGE Handbook of Qualitative Business and Management Research Methods: Methods and Challenges*. Sage, London.
- King, N., & Horrocks, C. (2010). *Interviews in Qualitative Research*. Sage, London.
- Kipping, M., & Usdiken, B. (2014). 'History in organization and management theory: more than meets the eye'. *The Academy of Management Annals*, 8:1, pp535-588
- Langley, A. (1999). 'Strategies for theorizing from process data'. *Academy of Management Review*, 24, pp691-710
- Langley, A., Smallman, C., Tsoukas, H., & Van de Ven, A. (2013). "Process studies of change in organisation and management: unveiling temporality, activity and flow". *Academy of Management Journal*, 56(1), pp1-13
- Lorenz, C. (2011). History in theory. In A. Schneider, D. Woolf & I Hesketh (Eds). *The Oxford history of historical writing. Volume 5. Historical writing since 1945*. Oxford University Press, Oxford, UK: pp13-35.

- Mills, A., Suddaby, R., Foster, W., & Durepos, G. (2016). Re-visiting the historic turn 10 years later: current debates in management and organizational history – an introduction, 11(2), pp67-76.
- Nadin, S. & Cassell, C. (2004). Using data matrices. In C. Cassell and G. Symon (eds.), *Essential Guide to Qualitative Methods in Organizational Research*. Sage, London.
- Maclean, M., Harvey, C., & Clegg, S. (2016). 'Conceptualizing historical organization studies'. *Academy of Management Review*, 41(4), pp609-632.
- Madill, A, Jordan, A., & Shirley, C. (2000). 'Objectivity and reliability in qualitative analysis: realist, contextualist and radical constructionist epistemologies'. *British Journal of Psychology*, 91, pp1-20
- Mahmood-Yousuf, K., Munday, D., King, N. & Dale, J. (2008) 'Interprofessional relationships and communication in primary palliative care: Impact of the Gold Standards Framework'. *British Journal of General Practice*, 58(549), pp256-63.
- Melton, A.W. (1963). Implications of short-term memory for a general theory of memory'. *Journal of Verbal Learning and Verbal Behavior*, 2, pp1-21.
- Miles, M., & Huberman, M. (1994). *Qualitative data analysis: an expanded sourcebook*. Sage, London.
- Moss, M. (2000). *The building of Europe's largest mutual life company: Standard Life, 1825-2000*. Mainstream, Edinburgh.
- Nissley, N. & Casey, A. (2002). The politics of the exhibition: viewing corporate museums through the paradigmatic lens of organizational memory' *British Journal of Management*, 13(special issue): pp.S35-S46.
- Pettigrew, A. (1990). 'Longitudinal field research on change: theory and practice'. *Organisation Science*, 1(3), pp267-292
- Ritchie, J. & Spencer, L. (1994). Qualitative data analysis for applied policy research. In A. Bryman and R.G. Burgess (eds.), *Analysing Qualitative Data*. Routledge, London.
- Rose, S. (2008). 'Memories are made of this' in H.H. Wood & A.S. Byatt (eds) *Memory: An Anthology*, Chatto & Windus, London: pp.54-67.

- Rowlinson, M. (2013). 'Management and organizational history: the continuing historic turn'. *Management and Organizational History*, 8(4), pp327-328
- Rowlinson, M., Hassard, J., & Decker, S. (2014). 'Research strategies for organizational history: a dialogue between historical theory and organization theory'. *Academy of Management Review*, 39(3), pp250-274
- Rowlinson, M., Booth, C., Clark, P., Delahaye, A. & Procter, S, (2010). Social remembering and organizational memory, *Organization Studies*, 31(1), pp69-87.
- Schacter, D.L. (1997). *Searching for Memory: The Brain, the Mind and the Past*, Basic Books, New York.
- Suddaby, R., Foster, W.M., & Quinn-Trank, C. (2016). Organizational re-membering: Rhetorical history as identity work. In M. Pratt, M. Schultz, B. Ashforth, & D. Ravasi (Eds.), *Oxford handbook of organizational identity*. Oxford, UK: Oxford University Press.
- Thompson, P. (1988). *The voice of the past: oral history (2nd edition)*. Oxford University Press: Oxford.
- Waring, T., & Wainwright, D. (2008). 'Issues and challenges in the use of template analysis: two comparative case studies from the field'. *The Electronic Journal of Business Research Methods*, 6(1), pp85-94
- Walsh, J.P. & Ungson, G.R. (1991). 'Organizational memory', *Academy of Management Review*, 16, pp57-91
- Zald, M. (1993). 'Organization studies as a scientific and humanistic enterprise: towards a reconceptualization of the foundations of the field'. *Organization Science*, 4(4), pp513-528

| | | | |
|--|-------------|-----------|-----------|
| Professional experience in the product market began: | Before 1980 | 1980-1985 | 1986-1990 |
| No. of respondents | 19 | 8 | 4 |

Table 1: Commencement of interviewees’ professional experience

| | | | | | |
|--------------|------------------------|--------------------|----------------------------|-----------------------|-----------|
| Time periods | Mid to late 1980s | Early to mid-1990s | Mid-1990s to mid-noughties | Mid-noughties to 2012 | 2012-2014 |
| Product type | Non-modular/integrated | Closed and modular | Hybrid | Modular | Hybrid |

Figure 1: Initial matrix ⁹

⁹ As a general systems theory (Schilling, 2000), modularity has often been researched as a static, cross-sectional property of organisational systems, such as industries, organisations and products (see for example Campagnolo & Camuffo, 2012, for a literature review). In contrast, the typology provided to interviewees follows Anonymous (2018) to conceptualise modularity as a dynamic systemic phenomenon.

| | | | | | |
|------------------------------|------------------------|--------------------|----------------------------|-----------------------|-----------|
| Time periods | Mid to late 1980s | Early to mid-1990s | Mid-1990s to mid-noughties | Mid-noughties to 2012 | 2012-2014 |
| Product type | Non-modular/integrated | Closed and modular | Hybrid | Modular | Hybrid |
| Industry themes | Template | Template | Template | Template | Template |
| Organisation-specific themes | Template | Template | Template | Template | Template |
| Product design themes | Template | Template | Template | Template | Template |

Figure 2: Final matrix structure applied to the data

| | | | |
|---|-------------|-----------|-----------|
| Professional experience in the product market began: | Before 1980 | 1980-1985 | 1986-1990 |
| No. of respondents | 19 | 8 | 4 |

Table 1: Commencement of interviewees’ professional experience

| | | | | | |
|--------------|------------------------|--------------------|----------------------------|-----------------------|-----------|
| Time periods | Mid to late 1980s | Early to mid-1990s | Mid-1990s to mid-noughties | Mid-noughties to 2012 | 2012-2014 |
| Product type | Non-modular/integrated | Closed and modular | Hybrid | Modular | Hybrid |

Figure 1: Initial matrix¹

¹ As a general systems theory (Schilling, 2000), modularity has often been researched as a static, cross-sectional property of organisational systems, such as industries, organisations and products (see for example Campagnolo & Camuffo, 2012, for a literature review). In contrast, the typology provided to interviewees follows Burton and Galvin (2018) to conceptualise modularity as a dynamic systemic phenomenon.

| | | | | | |
|------------------------------|------------------------|--------------------|----------------------------|-----------------------|-----------|
| Time periods | Mid to late 1980s | Early to mid-1990s | Mid-1990s to mid-noughties | Mid-noughties to 2012 | 2012-2014 |
| Product type | Non-modular/integrated | Closed and modular | Hybrid | Modular | Hybrid |
| Industry themes | Template | Template | Template | Template | Template |
| Organisation-specific themes | Template | Template | Template | Template | Template |
| Product design themes | Template | Template | Template | Template | Template |

Figure 2: Final matrix structure applied to the data